SUBJECT INDEX

Abyssal flow 6
Acceleration potential
  equatorial 13°C water 245
  subantarctic water 253
  subtropical water 260
Alboran Sea gyre 113–44
  Atlantic water rotation 123
  bottom topography 120
  boundary effects 126–9
  circulation 114
    determination 140–2
  density normalized pressure anomaly
      contours 138
  drifter movement 140–2
  dynamic topography 114, 115
  location 114
  lower layer velocity 137
  models 117–21
  negative velocity at inflow 126
  pycnocline anomaly 128, 134, 136
  reduced gravity 122, 123
  satellite infrared imagery 116
  standard inflow 132
  temperature contours 131, 135
  time, Atlantic water inflow 131–5
  topographic effects 135–40
  two-layer models 129–42
    reduced gravity comparison 131, 132
  upstream induced shear 125
Andhra cyclone
  models 225, 228
  surge elevation 226, 229
  tidal constituents 229
  track 218
  wind field 219
Atlantic ocean thermostads 235–65
Atmospheric forcing, oceanic response 92

Bay of Bengal
  classification and water level 215
  half range of tide 230
  list, storm surges 198–207
  locations 197
  map 196
  recurving storm 211
  storm surge problem 195–231 *see also* Storm
      surge
Biogenic particles, remineralization half-times 179

Coriolis effect 137

Density, 1500 db 24
Drifters, Alboran Sea 140–2

Eastern Pacific
  current scheme 64
  equatorial undercurrent 63–88
  hydrographic stations 67
  mean depth 76
  thermostad thickness 71
Equatorial undercurrent
  data processing 66–9
  dissolved oxygen 79–81
  dynamic topography 81–7
    depth 83
  dynamic variation, height 86, 87
  geostrophic current 84
    zonal sections 85
  geostrophic flow 81–7
    zonal component 83
  high-salinity core 74–9
    seasonal variation 75, 76
  hydrographic signatures 69–87
  mean 69, 70
  seasonal variation 71–4
  termination, Eastern Pacific 63–88
  thermostad 69

FGGE (First GARP Global Experiment) 91–110
  atmospheric forcing 92
  climatological time-series 109
  long- and short-wave radiation 102
  near surface currents 99
  observations and distribution 93
  oceanographic observations 99–108
  sea surface temperature 107, 108
    fields 108, 109
  shipping lanes 94
  surface heat fluxes 99
  surface winds 95–9
    ITCZ position 98
    vector differences 97
  thermocline depth 104–7
    climatological properties 106
  time–longitudinal plots 100, 101
  wind component time-series 99
  zonal surface current speed 102, 103
Filtration, large volume sampling 156, 157

GARP *see* FGGE
Geopotential anomaly
  sea surface 9
  1000 db 18–21
  1500 db 22–8
  2000 db 28–31
Geostrophic circulation
  barotropic component 6
  deeper 18–48 *see also* individual tracers

Eastern Pacific equatorial undercurrent 81–7
large scale 4
layers 13–17
salinity tracers 13–17
South Pacific Ocean 1–57
study limitations 4–6
temperature tracers 13–17
Geostrophic speed
and depth 52
Tasmania to Chile 53
Geostrophic transport, velocity field 54–6

Hydrostatic stability 15, 17

Large particles
benthic fluff 153
biodetritus production rates 163–5
biogenics 172, 173
clay aggregates 152, 153
element and organic particle transport 166–85
fecal pellets 148–51, 161, 162
lithogenics 172, 173
marine snow 152, 162
organisms and hard parts 151, 152
radionuclide carriers 179–85
sampling methods 153–8
sediment particles 153
sinking speed 158–60
field 159, 160
laboratory 158, 159
subsurface production 161, 162
surface production 160
trace elements 174–9
zooplankton 175
transport role 147–85
VERTEX sites 167
vertical migration 165
water column production 160–5

Models
Alboran Sea 117–21
drifter movement 40–2
experiments 121–9
parameters 119
reduced gravity cases 121–9
two-layer 129–42
cyclones and storm surge 215–22
SPLASH 223
storm surge 222–30

Nitrogen transport 166–8
North Atlantic, organic compounds 170

Oceanic response, observed and modelled 92
Optical assessment, large particles 157
Organic carbon transport 166–8
Organic compounds transport 168–72
types 170
Oxides in sediments 41
Oxygen
equatorial 13°C water 246
subantarctic mode water 254
subtropical water 261
Oxygen tracer 15, 17
equatorial undercurrent 79–81
depth 84
1000 m 21
1500 m 25, 27
2000 m 29
2500 m 33
3000 m 39, 40
3500 m 45, 47

Phosphate
equatorial 13°C water 247
subantarctic water 255
subtropical water 262
Phosphorus transport 166–8
Plankton nets 158

Radionuclides
remineralization half-times 179
residence times, seawater 181
transport 179–85
zooplankton 184

Salinity
equatorial 13°C water 244
equatorial undercurrent 76
isopycnals 10, 11
subantarctic mode water 252
subtropical water 259
tracer 14, 16
vertical section, equatorial undercurrent 78
1000 m 20
1500 m 24, 26
2000 m 31
2500 m 34
3000 m 38
3500 m 44, 46, 47
Sampling methods
large particles 153–8
submersible 157
Sediment traps 153–5
Silica tracer 15, 17
1500 m 25, 27
2000 m 30, 31
2500 m 34, 35
3000 m 45
South Pacific Ocean 1–57
acceleration potential 10, 11
depth 20, 26, 29, 33, 38, 44, 46, 48
geostrophic flow stations 3
salinity isopycnal 10, 11
steric height 5, 9, 12
topographic features 2
transport 54–6
upper layer circulation 7–12
velocity field 48–54
Specific-volume anomaly 238, 239

Steric height 7
calculation 5
and velocity field 48–51
1000 db 18, 19
1500 db 22, 23
2000 db 28
2500 db 32
3000 db 36, 37
3500 db 42, 43
Storm surges, Bay of Bengal 195–231
cyclone approach angles 223
cyclone models 215–22
cyclonic storm frequency 211
damage 205
danger zone 213–15
dates and casualties 198–207
floods 195
generation factors 208
gradient wind distribution 217
maximum possible 214
models 222–30
prediction methods 231
nomenclature 210
Surface winds, FGGE 95–9
Synthetic Bathymetric Profiling System (SYNBAPS) 120

Temperature
and abyssal depth 51
–salinity relation, equatorial undercurrent 77
annual cycle 79
tracer 14, 16
Thermal structure, equatorial undercurrent 72
Thermostad 69, 72
Atlantic Ocean 235–65
18°C water 250
data used 237
definition 236
distribution 237
equatorial region 256, 257
equatorial 13°C water 241–9
formation 248, 249
isoanosteric surface 238, 239
reverse flows 248
subantarctic mode water 250–6
depth 251
formation 256
subtropical water 257–63
depth 258
surface water 241–8
thickness 238–41
Trace elements
distribution 175
fluxes 178
transport 174–9
vertical transport 177
Transport 54–6
elements and organic compounds 147–85
units 55

Velocity field 48–54

Wind forcing 219
strong and weak 222